

## REMARKS

Applicant submits the following remarks.

These amendments should overcome any objections and rejections of the examiner previously made.

Applicant does note that the essentially conical section of the mandrel is not disclosed in Wellech nor obvious in view of Klavik.

Likewise the requirement of a stationary block with an angular face sufficient to itself cause the glass bead to move, is not disclosed in Wellech, nor obvious in Klavik.

Moreover, the stabilizing bar attached to the conical section is not disclosed in Wellech, nor obvious in view of Klavik.

Although the examiner has previously indicated that there is an attachment means in Wellech that is slidably engaged, as applicant has claimed in claim 4, applicant counsel sees no means in Wellech for attaching the glass thread where the attachment means is slidably engaged.

Moreover, as to claim 5, the attachment means itself must have adjustable tension means, so as to adjust the tension between the attachment means and the stabilizing bar. Once again, applicant fails to see any attachment means in Wellech that is itself, adjustable (in tension) with respect to the stabilizing bar, let alone slidable along the stabilizing bar. Applicant believes the examiner is referring to other tension adjustment means in Wellech, without addressing the adjustable tension between the attachment means and the stabilizing bar.

While applicant asserts that all original claims are not anticipated by Wellech or obvious by Klavik, applicant believes that the amendments made should make the amended claims ready for issuance.

Respectfully submitted,

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Marked Up Version Showing Changes Made  
6/17/03

The following are the claims as amended, showing changes made. New words are in bold and underlined, deleted words are in parenthesis. Claims 4, 6, 7, 8, 9, 10 are shown as amended because their base claim is amended.

1. (Amended) An apparatus for forming glass coiled tubes from a source of glass from which a molten glass thread is drawn, comprised of:

- a. A shaping mandrel having a first end and an opposing second end, said mandrel having an essentially conical shape near the second end (desired shape) for receiving around it the molten glass thread such that when the thread is drawn about the mandrel (desired shape), a formed coil is developed that essentially takes a desired shape from the shaping mandrel;
- b. A stationary block having an angular face causing movement of (for moving) the formed coil in a direction towards the second end in direct response to additional molten glass thread drawn to the coil;
- c. Attachment means for first engaging the molten glass thread;
- d. Variable rotating means for rotating the attachment means.

2. (Amended) An apparatus for forming glass coiled tubes from a source of glass from which a molten glass thread is drawn, comprised of:

- a. A shaping mandrel having a first end and an opposing second end, said mandrel having an essentially conical shape near the second end (a desired shape) for receiving around the mandrel (it) the molten glass thread such that when the thread is drawn about the mandrel (desired shape) a formed coil is developed that

essentially takes a desired shape from the shaping mandrel;

b. A block for redirecting the formed coil at a point on the blade defining a lateral drive point so as to cause the formed coil to move without other external means towards the mandrel second end, and where the block is positioned in a manner such that the lateral drive point is positioned between the second end of the mandrel and the direction from which the molten glass thread is fed (. With) with respect to the shaping mandrel so as to allow the molten glass thread fed from a direction behind the lateral drive point, nearest the mandrel first end.

c. Attachment means for first engaging the molten glass thread;

d. Variable rotating means for rotating the attachment means.

3. (Amended) The glass forming apparatus in Claim 1 having (: ) (a) **an** elongated stabilizing bar attached to the second end of the mandrel near at the end of the conical portion and (the mandrel) of sufficient length to support the desired length of the formed glass coil, said stabilizing bar having a first end adjacent to the second end of the mandrel and having a second end opposing the first end.

4. (Amended) The glass coil forming apparatus in Claim 3 wherein the attachment means is slidably engaged with the stabilizing bar.

5. (Amended) The glass coil forming apparatus in Claim 4 wherein the (hook) attachment means has tension adjusting means thereon to vary the tension between the attachment means and the stabilizing bar.

6. (Amended) The glass coil forming apparatus in Claim 1 having means for adjusting the resistance to the movement of the formed coil.

7. (Amended) The glass coil forming apparatus in Claim 2 wherein the block has an essentially planar face upon which the lateral drive point exists and wherein the block planar face

is angled with respect to the direction of the movement of formed glass coil.

8. (Amended) The glass coil forming apparatus in Claim 1 wherein the block has an opening through which the shaping mandrel protrudes.

9. (Amended) The glass coil forming apparatus in Claim 1 wherein the attachment means is attached to the second end of the shaping mandrel.

10. (Amended) The glass coil forming apparatus in Claim 9 having an elongated stabilizing bar having a first end and a second end connected so as to allow the formed glass coil to move on to the stabilizing bar.

Claims 11 - 17 are non elected and have been withdrawn from consideration.

11. A method for forming coiled glass tubes from a source of molton glass, utilizing a mandrel, attachment means for attaching to the molten glass thread, means for rotating the attachment means; block means for directing the formed coil at a lateral drive point, comprised of steps of:

- a.. Drawing a molten glass thread from a molten glass source;
- b. Affixing the molten glass thread to the attachment means;
- c. Rotating the attachment means while drawing the molten glass thread around the shaping mandrel at a lateral drive point on the block so as to essentially simultaneously create a coil about the shaping mandrel while moving the formed coil towards the second end of the shaping mandrel, to create a plurality of continuous coils comprising a formed glass coil.

12. The method in Claim 11 having the additional step of adjusting the resistance to the formed coil movement so as to create coils of different desired appearances.

13. The method in Claims 11 or 12 having the additional steps of:

- a. Allowing the formed glass coil to cool;

- b. Cutting the tubes to desired lengths to create beads, each having opposing cut ends;
  - c. Shaping the beads as desired;
  - d. Polishing the beads as desired.
- 14. The method in Claim 13 wherein the step of polishing the beads is comprised of:
  - a. Placing the beads on their cut end on a kiln shelf in a spaced apart fashion;
  - b. Placing the kiln shelf with beads in a kiln and raising the temperature to at least 1200 degrees Fahrenheit until the top of the beads draw inward leaving the bead with a smaller top than bottom so as to create a conical effect;
  - c. Annealing the beads;
  - d. Cooling the beads.
- 15. The method in Claim 14 having the additional steps of:
  - a. Before annealing, first cooling the beads sufficiently to turn them over;
  - b. Reheating the beads so as to shape the top until the top draws inward to create an essentially cylindrical shape;
  - c. Annealing the beads.
- 16. The method in Claim 15 wherein the shaping step is comprised of the following steps:
  - a. Heating the glass beads slowly with a hand torch in a uniform manner;
  - b. Heating the ends of the beads to create beads having ends tending to close in around a hollow center;
  - c. Allowing the beads to cool.
  - d. Annealing the beads.
- 17. The method in Claim 17

**Clean Version of Claims With Changes**  
**6/17/03**

1. (Amended) An apparatus for forming glass coiled tubes from a source of glass from which a molten glass thread is drawn, comprised of:

- a. A shaping mandrel having a first end and an opposing second end, said mandrel having an essentially conical shape near the second end for receiving around it the molten glass thread such that when the thread is drawn about the mandrel, a formed coil is developed that essentially takes a desired shape from the shaping mandrel;
- b. A stationary block having an angular face causing movement of the formed coil in a direction towards the second end in direct response to additional molten glass thread drawn to the coil;
- c. Attachment means for first engaging the molten glass thread;
- d. Variable rotating means for rotating the attachment means.

2. (Amended) An apparatus for forming glass coiled tubes from a source of glass from which a molten glass thread is drawn, comprised of:

- a. A shaping mandrel having a first end and an opposing second end, said mandrel having an essentially conical shape near the second end for receiving around the mandrel the molten glass thread such that when the thread is drawn about the mandrel a formed coil is developed that essentially takes a desired shape from the shaping mandrel;
- b. A block for redirecting the formed coil at a point on the blade defining a

lateral drive point so as to cause the formed coil to move without other external means towards the mandrel second end, and where the block is positioned in a manner such that the lateral drive point is positioned between the second end of the mandrel and the direction from which the molten glass thread is fed with respect to the shaping mandrel so as to allow the molten glass thread fed from a direction behind the lateral drive point, nearest the mandrel first end.

c. Attachment means for first engaging the molten glass thread;

d. Variable rotating means for rotating the attachment means.

3. (Amended) The glass forming apparatus in Claim 1 having an elongated stabilizing bar attached to the second end of the mandrel near at the end of the conical portion and of sufficient length to support the desired length of the formed glass coil, said stabilizing bar having a first end adjacent to the second end of the mandrel and having a second end opposing the first end.

4. (Amended) The glass coil forming apparatus in Claim 3 wherein the attachment means is slidably engaged with the stabilizing bar.

5. (Amended) The glass coil forming apparatus in Claim 4 wherein the attachment means has tension adjusting means thereon to vary the tension between the attachment means and the stabilizing bar.

6. (Amended) The glass coil forming apparatus in Claim 1 having means for adjusting the resistance to the movement of the formed coil.

7. (Amended) The glass coil forming apparatus in Claim 2 wherein the block has an essentially planar face upon which the lateral drive point exists and wherein the block planar face is angled with respect to the direction of the movement of formed glass coil.

8. (Amended) The glass coil forming apparatus in Claim 1 wherein the block has an opening through which the shaping mandrel protrudes.



9. (Amended) The glass coil forming apparatus in Claim 1 wherein the attachment means is attached to the second end of the shaping mandrel.

10. (Amended) The glass coil forming apparatus in Claim 9 having an elongated stabilizing bar having a first end and a second end connected so as to allow the formed glass coil to move on to the stabilizing bar.

Claims 11 - 17 are non elected and have been withdrawn from consideration.

11. A method for forming coiled glass tubes from a source of molten glass, utilizing a mandrel, attachment means for attaching to the molten glass thread, means for rotating the attachment means; block means for directing the formed coil at a lateral drive point, comprised of steps of:

- a.. Drawing a molten glass thread from a molten glass source;
- b. Affixing the molten glass thread to the attachment means;
- c. Rotating the attachment means while drawing the molten glass thread around the shaping mandrel at a lateral drive point on the block so as to essentially simultaneously create a coil about the shaping mandrel while moving the formed coil towards the second end of the shaping mandrel, to create a plurality of continuous coils comprising a formed glass coil.

12. The method in Claim 11 having the additional step of adjusting the resistance to the formed coil movement so as to create coils of different desired appearances.

13. The method in Claims 11 or 12 having the additional steps of:

- a. Allowing the formed glass coil to cool;
- b. Cutting the tubes to desired lengths to create beads, each having opposing cut

ends;

- c. Shaping the beads as desired;
  - d. Polishing the beads as desired.
14. The method in Claim 13 wherein the step of polishing the beads is comprised of:
- a. Placing the beads on their cut end on a kiln shelf in a spaced apart fashion;
  - b. Placing the kiln shelf with beads in a kiln and raising the temperature to at least 1200 degrees Fahrenheit until the top of the beads draw inward leaving the bead with a smaller top than bottom so as to create a conical effect;
  - c. Annealing the beads;
  - d. Cooling the beads.
15. The method in Claim 14 having the additional steps of:
- a. Before annealing, first cooling the beads sufficiently to turn them over;
  - b. Reheating the beads so as to shape the top until the top draws inward to create an essentially cylindrical shape;
  - c. Annealing the beads.
16. The method in Claim 15 wherein the shaping step is comprised of the following steps:
- a. Heating the glass beads slowly with a hand torch in a uniform manner;
  - b. Heating the ends of the beads to create beads having ends tending to close in around a hollow center;
  - c. Allowing the beads to cool.
  - d. Annealing the beads.
17. The method in Claim 17